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SECRETARY

ET Docket No. 94-32

COMMENTS OF ASSOCIATION FOR MAXIMUM  
SERVICE TELEVISION, INC.

The Association for Maximum Service Television, Inc. ("MSTV") hereby files comments to the Notice of Inquiry, ET Docket No. 94-32, released in the above captioned docket on May 4, 1994 ("Notice").<sup>1/</sup>

In the Notice, the Commission seeks comments regarding the potential uses for three bands of spectrum that NTIA has tentatively designated for transfer from government sector to private sector use. Notice, at ¶ 4. The bands include the 2390-2400 MHz band, the 2402-2417 MHz band, and the 4660-4685 MHz band. Id. For the following reasons, a portion of this spectrum, specifically the 4660-4685 MHz band, should be reserved for wideband advanced digital video services and allocated to terrestrial fixed and mobile auxiliary broadcast operations.

1/ MSTV is a trade association of approximately 250 local broadcast television stations committed to achieving the highest technical quality feasible for the local broadcast system.

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List A B C D E

**I. Insufficient Spectrum Is Presently Allocated for Broadcast Auxiliary Operations.**

Television broadcasters are currently allocated three primary spectrum bands, 1990-2110 MHz, 6875-7125 MHz and 12.70-13.25 MHz, for "auxiliary" operations, including electronic news gathering ("ENG"), intercity relays ("ICRs"), and studio-to-transmitter links ("STLs").<sup>2/</sup> As the Commission is well aware, these "auxiliary" operations, in particular mobile newsgathering in the 1990-2110 MHz band, have in fact become indispensable components of daily television station operations.

Increased reliance on these activities (and particularly ENG) has resulted in intense congestion, especially in major metropolitan areas.<sup>3/</sup> A 1989 industry study found that broadcasters would need significantly more ENG capacity in the immediate future. E. Cohen, Television

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<sup>2/</sup> See 47 C.F.R. §§ 2.106, 74.602 (1994). These bands are shared on a primary basis with both broadcast network mobile operations and cable system operators and networks auxiliary operations.

<sup>3/</sup> See R. Matheson & K Steele, A Preliminary Look at Spectrum Requirements for the Fixed Services 40-41 (May 1993); E. Cohen, Television Auxiliary Frequencies Usage Surveys 6-7 (1989) (attached to the NAB's Comments in Gen. Docket No. 90-314 (Oct. 1, 1990)); Reply Comments of MSTV, ET Docket 93-198, at 3-4 (July 29, 1993); Reply Comments of MSTV, Gen. Docket No. 89-554, at 3-4 (Jan. 8, 1991); Comments of Capital Cities/ABC, Engineering Statement of Kenneth Brown, Gen. Docket No. 90-314 (Oct. 1, 1990); see also Comments of NAB, Gen. Docket No. 90-314 (Oct. 1, 1990); Comments of Capital Cities/ABC, Inc., Gen. Docket No. 90-314 (Oct. 1, 1990); Comments of Cox Broadcasting and Multimedia, Inc., Gen. Docket No. 90-314 (Oct. 1, 1990); Comments of H & C Communications, Inc., Gen. Docket No. 90-314 (Oct. 1, 1990).

Auxiliary Frequencies Usage Surveys 4 (1989) (the "Cohen Study"). This result is not surprising, given the fact that over 80% of the participants in the study reported congestion problems in their area. Id. at 6.

A more recent government study, prepared by the Institute for Telecommunications Sciences at NTIA, confirmed the industry findings. See R. Matheson & K. Steele, A Preliminary Look at Spectrum Requirements for the Fixed Services 40-41 (May 1993) (the "ITS Study") (the relevant portions of the study are attached). The ITS Study found that the 1990-2110 MHz band is "already crowded in many major markets." Id. at 41. It also found a 14.6% annual rate of growth in broadcasters' use of the band from 1989-93. Id. at 40. Moreover, the ITS Study projects a 15% annual growth rate in use for the next five years. Id. Clearly, the Commission must take steps to address this situation before crowding entirely disrupts vital broadcast auxiliary operations.

The problems caused by crowding are highlighted on a recurring basis in larger markets whenever major news events occur; in such circumstances, the spectrum needs of broadcasters routinely exceed the available channel capacity, creating electronic gridlock.<sup>4/</sup> In order to avoid "spectrum

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<sup>4/</sup> Indeed, the Commission recognized the threat of such an occurrence just this month. With the United States hosting the World Cup tournament, electronic news gathering activities related to the matches will be taking place in several major markets across the United States. However, available broadcast auxiliary spectrum is clearly insufficient to meet  
(continued...)

chaos," the Commission has made additional spectrum available for ENG operations on an ad hoc basis. However, even in instances where the Commission has provided temporary relief from overcrowding, some broadcasters still have not enjoyed access to adequate spectrum.<sup>5/</sup>

The fact of the matter is that for many metropolitan areas, serious congestion in the broadcast auxiliary band already exists without the extra spectrum requirements generated by particularly important sports and news events. ITS Study, at 41-42; Cohen Study, at 6-7. Moreover, there is every reason to believe that this congestion will significantly increase with the advent of ATV.<sup>6/</sup> As the ITS Study explained, "[t]he prospect of needing additional auxiliary broadcast signals to support HDTV is a potentially serious problem, particularly if HDTV signals are transmitted before they are digitally compressed." ITS Study, at 41. The spectrum required to facilitate dual ATV/NTSC broadcast

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<sup>4/</sup>(...continued)

the ENG needs of the national and international community. See McConnell, "FCC Referees World Cup Broadcast Concerns," Broadcasting Magazine, at 54 (June 6, 1994).

<sup>5/</sup> The World Cup is again illustrative. Bill Ruck, chairman of the Northern California Frequency Coordinating Committee, has publicly stated that even with the spectrum authorized for use by the Commission "[t]here's no way I'm going to be able to accommodate all of the [broadcasters]." Id.

<sup>6/</sup> See ITS Study, at 41; Reply Comments of MSTV, ET Docket No. 93-198, at 4 & 4 n.5 (July 29, 1993).

operations will rapidly exceed the capacity of already overburdened broadcast auxiliary spectrum.<sup>7/</sup>

In short, the existing allocation of spectrum for auxiliary broadcast operations is barely capable of absorbing existing NTSC demands in larger markets, and is clearly insufficient to meet the anticipated ATV needs of television broadcasters.<sup>8/</sup> And, given the mobile nature of ENG operations, sharing spectrum with other users, particularly fixed users, on a co-primary or secondary basis is not a viable means of resolving the problem.<sup>9/</sup> Plainly, additional spectrum for broadcast auxiliary operations is necessary in

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<sup>7/</sup> In addition to the need for increased spectrum due to dual mode ENG operations, dual mode ATV and NTSC operations will likely require some stations to use separate equipment and transmitter feeds, thus significantly increasing the use of auxiliary broadcast spectrum. See ITS Study, at 4; see generally In the Matter of Advanced Television Systems, Third Report and Order, 7 FCC Rcd 6924, 6970-80 (1992).

<sup>8/</sup> Indeed, almost a decade ago, the Commission noted that crowding caused by increased ENG operations was forcing broadcasters to migrate into the 2450-2500 MHz band, even at the cost of new equipment. "[B]ecause of the increased use of these lower channels for ENG, which has resulted in increasing incidences of interference, a number of broadcasters are beginning to acquire equipment that permits use of the upper three channels, i.e., 2450-2400 MHz." In the Matter of Allocating Spectrum for, and Establishing Other Rules and Policies Pertaining to, a Radiodetermination Satellite Services, 50 Fed. Reg. 39101, 39104 (1985) ("Radiodetermination Services").

<sup>9/</sup> For example, it is not clear that spectrum sharing between broadcast auxiliary operations and MSS is feasible. See In the Matter of Redevelopment of Spectrum, First Report and Order, 7 FCC Rcd 6886, 6888 n.15 (1992) ("AMSC also contends that for MSS, sharing with other services is not likely to be feasible.")

order to ensure continuity of high quality, universally available, and locally-based broadcast television service, responsive to the needs of local communities.

**II. The Commission Should Allocate the 4660-4685 MHz Band To Broadcast Auxiliary Operations.**

The Commission seeks comment on the potential uses of three bands of spectrum: the 2390-2400 MHz, the 2402-2417 MHz, and 4660-4685 MHz bands. Of these three bands, only the 4660-4685 MHz band is suitable for wide band advanced digital video auxiliary operations.

Of the three available bands, only the 4660-4685 MHz band offers adequate bandwidth, 25 MHz including guard bands, feasible for video delivery and ATV transmissions. The 4660-4685 MHz band, moreover, is the only one of the three bands which holds the prospect of future expansion because it is contiguous with the 4635-4660 MHz band, which NTIA has tentatively identified for transfer to private sector uses by 1997. Notice, Appendix A.

Neither of the other two bands is adaptable for broadcast operations. Neither the 10 MHz at 2390-2400 MHz nor the 15 MHz at 2402-2417 MHz contain sufficient spectrum to support the broadband requirements of video signals. Moreover, the wider of the two, 2402-2417 MHz, is particularly inappropriate for television broadcast operations because it is currently subject to interference caused by industrial,

scientific, and medical ("ISM") devices. Notice, at ¶ 6.<sup>10/</sup>  
The potential for widespread and ongoing interference renders  
this band largely unsuitable for use by television  
broadcasters.<sup>11/</sup>

MSTV believes that allocation of the 4660-4685 MHz  
band for broadcast auxiliary operations is compatible with  
current international allocations and could effectively be  
engineered around the existing intercontinental space-to-earth  
links using the 4660-4685 MHz band. Moreover, to the extent  
that domestic use of this spectrum for mobile ENG operations  
would be subject to a bilateral agreement with Canada, see  
Notice, at ¶ 8, protocols for use of the band at or near the  
U.S./Canadian border could provide adequate protection of  
Canadian interests.

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<sup>10/</sup> In fact, the Commission reallocated spectrum allocated  
for broadcast auxiliary operations in the 2483.5-2500 MHz  
band, in part because broadcasters were using the spectrum  
only lightly. Harmful interference from ISM equipment  
rendered the spectrum less desirable than the spectrum in the  
1990-2110 MHz band for broadcast auxiliary operations. See  
generally In the Matter of Big Bend Tele. Co., Inc., 2 FCC Rcd  
2413, 2414 (1986); Radiodetermination Services, 50 Fed. Reg.  
at 39104. It appears that sharing is equally unsatisfactory  
to the ISM community. See T. Knudson & W. Bulkeley, "Clutter  
on Airwaves Can Block Workings of Electronics," The Wall  
Street Journal, June 15, 1994, at A1, col. 1.

<sup>11/</sup> As the Commission has noted, broadcasters historically  
have made greater use of the seven 17 MHz channels in the  
1990-2110 MHz band than they have of the two channels in the  
2450-2500 MHz band. See In Re Application of Big Bend Tele.  
Co., Inc., 2 FCC Rcd 2413, 2414 (1986). Interference from a  
variety of ISM devices explains this phenomenon, at least in  
part.


**CONCLUSION**

MSTV urges the Commission to take the critical needs of television broadcasters into account when deciding how best to use the spectrum that will be made available for private uses pursuant to OBRA '93. In order to ensure the success of ATV broadcasting, the Commission should use this opportunity to provide sufficient spectrum for ATV support services.

Respectfully submitted,

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June 15, 1994



**ATTACHMENT**



**ITS STAFF STUDY**

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# **A Preliminary Look at Spectrum Requirements for the Fixed Services**

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May 1993

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## **Acknowledgements**

The authors would like to acknowledge the assistance of Bob Wilson, Office of Spectrum Management, for preparation of maps and graphs, and to thank Comsearch for providing historical data and current frequency assignment summaries for non-Government frequency bands. In addition, the authors would like to thank many industry and Government experts who shared information freely and provided much helpful advice in the preparation of this report.

## **Disclaimer**

This preliminary report was prepared by the Institute for Telecommunication Sciences at the request of the National Telecommunications and Information Administration (NTIA). It summarizes the recent history of the use of the Fixed bands, as well as the market and technology factors which will affect the use of these bands. The document was written to help resolve the questions posed by the Spectrum Requirements Notice of Inquiry (NOI)<sup>1</sup>, and it should be considered along with other Comments to the NOI. The opinions expressed herein are the opinions of the authors. This document has not been reviewed by NTIA for policy, and it should not be construed to reflect the official or unofficial policies or planning of NTIA.

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<sup>1</sup>Current and Future Requirements for the Use of Radio Frequencies in the United States. NTIA. Docket No. 920532 - 2132.

## 2.11 Usage in the 1990-2110 MHz Band Auxiliary Broadcast Service, CARS (ENG-only)

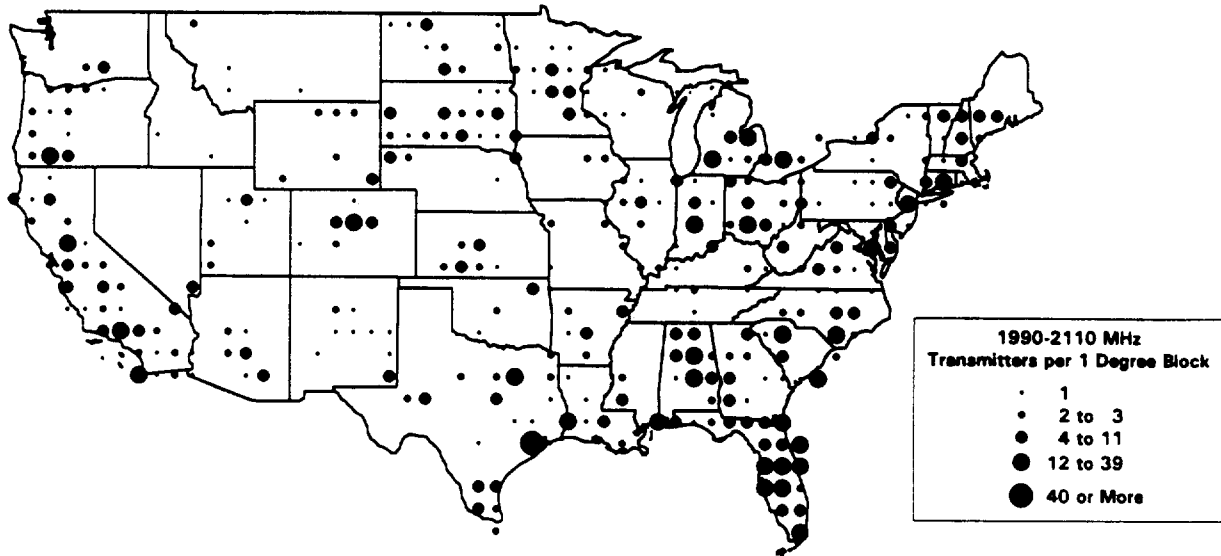


Figure 2.11-1. Density of assignments per square degree in the 1990-2110 MHz band.

Table 3.11-1. Statistics for 1990-2110 MHz

total US assignments (1991)	1536
peak assgnmts/1-degree block	95
effective # of channels	7
average US channel re-use	219
peak re-use/1-degree block	13.6
annual growth rate (last 4 yr)	14.6%
est. annual growth (next 5 yr)	15%

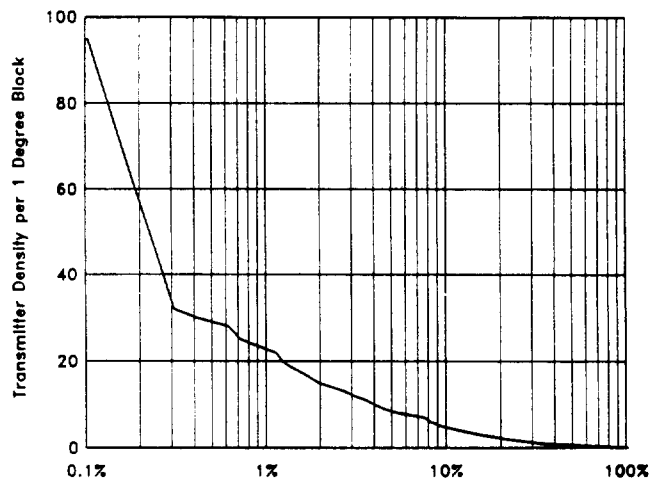


Figure 2.11-2. Percentage of blocks exceeding indicated transmitter densities.

**Typical users.** Typical users of this band include local TV broadcasters and the national network TV broadcasters. This band is used for electronic news gathering (ENG), studio-to-transmitter links (STL), intercity relay (ICR), and transmitter-to-studio links (TSL). In all cases, the 6-MHz-wide NTSC signal is frequency modulated on a 17-MHz-wide channel. In major TV markets, the band is crowded and ENG is coordinated on an hour-by-hour basis between TV channels, particularly during major scheduled or unscheduled events. Although alternative higher frequency bands exist for these functions, the 2 GHz band is particularly preferred for ENG.

**Recent growth in number of assignments.** Growth in this band over the past five years is shown in Figure 2.11-3. This growth is due to a continuing increase in the popularity of 'live' coverage of local events (ENG) by TV broadcasters.

**Comments.** This band is conspicuously absent from inclusion in the 'emerging technologies' bands recently earmarked by the FCC for future PCS and other similar systems. Broadcasters claim that the band is already very crowded, and that higher frequency bands do not permit the same degree of flexible use needed for ENG purposes. The prospect of needing additional auxiliary broadcast signals to support HDTV is a potentially serious problem, particularly if the HDTV signals are transmitted before they are digitally compressed. On the other hand, it is likely that increased availability of fiber will result in some STL and ICR links moving to fiber sometime in the future, which could free some spectrum for ENG. When crowding in this band becomes sufficiently acute, it may be possible to go to half-width channels with analog FM or digitally compressed signal formats.

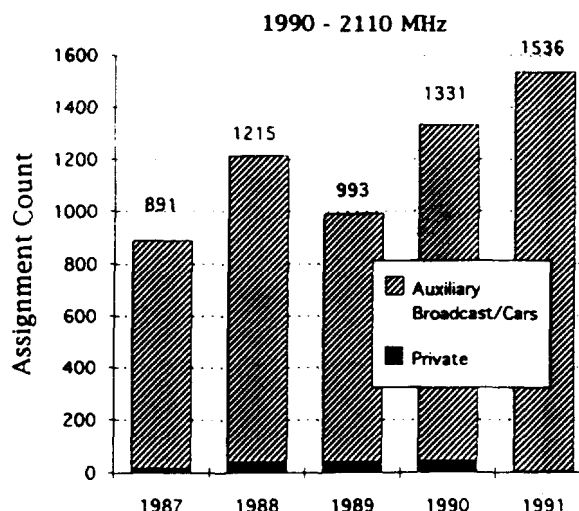


Figure 2.11-3. Number of assignments in the 1990-2110 MHz band (1987-1991).

**Expected future growth rate.** This band is already crowded in many major markets. Since it is the band most preferred for ENG, it is likely that continuing growth of ENG will take place, but some of the ICR and STL will be shifted to higher frequency bands or to fiber. In addition, broadcasters will continue to develop facilities to relay short ENG paths, which will generally provide more intensive re-use in this band. Finally, HDTV will eventually increase the numbers of equipments in this band. In summary, we would expect to see approximately the same growth rate (15 percent) continue for the next five years.